ATOMIC ENERGY Letter

THE FIRST AND ONLY

ROBERT M. SHERMAN, EDITOR. PUBLISHED BI-WEEKLY BY ATOMIC ENERGY NEWS CO., 1000 SIXTH AVENUE, NEW YORK 18, N. Y.

September 22nd, 1953
Vol. 10...No. 4

Dear Sir:

A proposal that the U. S. Government turn over the development of atomic energy to private industry, and sell fissionable materials and accessory substances to industry, was made by Harold C. Urey before the meeting last fortnight in Chicago of the American Chemical Society. Dr. Urey warned that the United States might fall behind other nations in industrial use of atomic energy, because of slow development along such lines. He also suggested that the Government provide incentives for small, new concerns to enter the atomic energy field. Important in bringing new companies into the field, Dr. Urey stated, was a rewriting of the Atomic Energy Act (1946) to give patent protection to developers of new devices. (Therapeutic device using radiophosphorous discussed at this meeting; page 3 of this LETTER.)

In an effort to combat wildcat strikes, such as those which have tied up construction of Electric Energy, Inc.'s Joppa, Ill., power plant, the heads of nineteen American Federation of Labor construction unions met in St. Louis last Friday to attempt a workable solution. The Joppa plant, which is to supply electrical energy to the USAEC's new Paducah, Ky., uranium-235 producer plant (also under construction), has had some 60 strikes since its inception. (Originally, Ebasco Services held the construction contract here; subsequently it was given to Bechtel Corporation.)

While great progress is being made by Knolls Atomic Power Laboratory in building an atomic power plant for the submarine "Sea Wolf" (page 2 this LETTER), there is a marked difference between such a plant, or one for a military aircraft, and a plant to generate power for industrial or domestic use, H. W. Huntley, of the Atomic Power Study, in the General Electric Co. Atomic Products Div., told the Conference on Nuclear Engineering at the University of Calif., last fortnight. (General Electric is the contractor-operator of Knolls Atomic Power Laboratory.) Mr. Huntley pointed out that the military atomic power plant is not in competition with existing methods for propelling military craft, since it represents a superior unit with performance characteristics under conditions impracticable or impossible for petroleum-operated engines. However, as he pointed out, in the commercial field they enjoy no such advantage. Today, he stated, atomic power plants would have to sell electrical power at approximately six mils per kilowatt-hour, to become a major factor in the power industry in the United States. To do this, plutonium would have to be sold at $51.50/gram; this compares with $20 to $30/gram at which it should be sold to compete with coal for a typical modern steam station on the basis of the heat energy it contains.

Preparations are continuing in Australia, at the Woomera rocket range, for the nuclear experiments which Great Britain plans to conduct there early in October. At present, Duncan Sandys, British Minister of Supply, is in Australia, assisting preparations for the tests. Now it is planned that Lord Cherwell, principal advisor to the Prime Minister of atomic energy matters, will be in Australia this month, in connection with the tests.

Subscription rates: United States, U.S. possessions, and Canada, $18.00 a year. Latin America, $20.00 a year. All other countries, $25.00 a year.

Copyright Atomic Energy News All rights reserved.

BUSINESS NEWS...in the nuclear energy field...

NUCLEAR ENERGY FOR POWER GENERATION DISCUSSED: A three day symposium on atomic power, held the last fortnight at Atomic Energy of Canada, Ltd's. Chalk River, Ontario, establishment, brought together representatives of Canadian power companies, firms manufacturing generators and other heavy power equipment, and member of the staff of A.E.C.L. For this first conference, only those companies which have initiated their own studies in the development of atomic energy in Canada, and whose people already have security clearance for access to Chalk River research results, sent delegates. Participating companies included the Hydro Electric Power Commission of Ontario; Quebec Hydro Electric Commission; The Shawinigan Water and Power Company; and Calgary Power, Ltd. Papers presented included consideration of such matters as problems of production and distribution of power; trends in market requirements; and general cost considerations. Members of the Chalk River staff presented papers on various types of reactors and associated processing plants; effects of radiation on the structural properties of a number of materials; and reactor fuels. Dr. C. J. Mackenzie, president of Atomic Energy of Canada, Ltd., stated that since there are now several attractive-looking approaches to the design of an atomic power producing station, the atomic power symposium was part of A.E.C.L.'s program of feasibility studies. He said he hoped the symposium would allow power companies to become better acquainted with the research results obtained at Chalk River, and that the A.E.C.L. staff in turn would become more familiar with the many problems of power production and distribution.

KEEL LAID FOR SECOND NUCLEAR POWERED SUBMARINE: At the shipyard of the Electric Boat Division of General Dynamics Corp., in Groton, Conn., the keel was laid last week of the submarine Sea Wolf, the second underseas craft in the U.S. Navy to be powered by a nuclear reactor. The displacement of the Sea Wolf and its sister ship the Nautilus--between 3,000 and 4,000 tons--will make them the largest in the Navy. Work on the Nautilus has brought that vessel to where it will soon be launched, from ways next to those on which the Sea Wolf is being built. The power plant of the Nautilus, now under construction by Westinghouse Electric, will be the submarine thermal reactor type, with water a heat transfer medium. The Sea Wolf will use the submarine intermediate reactor, now being built by General Electric Co., as a power plant; liquid sodium will be the heat transfer medium.

Henry D. Smyth, physicist member of the USAEC, speaking at the keel laying, pointed out that the Sea Wolf will use a power plant based on scientific discoveries made in the laboratory only fourteen years ago. Dr. Smyth used the occasion to observe that basic scientific research must be unhurried and free. He said it must be remembered that the most useful results in the long run may well come from laboratories where immediate usefulness is not considered an important criterion. The results which emerge from such a laboratory must, of course, be understood, he stated; and they should be developed by a group that has practical applications in mind, and then must go through the final stage of construction and to eventual use. It was such cooperation, Dr. Smyth said, that made the Sea Wolf possible.

LIST OF TARGET AREAS DISCLOSED: A list of some seventy cities and localities which the Federal Civil Defense Administration considers critical target area was made public by the FCDA in Washington last week. They were described by the agency as the most probable targets for atomic bomb attacks. The overall yardstick for inclusion on this list was the employment in the city or locality, of at least 40,000 persons in manufacturing plants. These critical zones, as a result of this method of tabulation, are concentrated in the North Central States, although two (New Orleans and Houston, Tex.) are on the Gulf of Mexico and four (Oakland, San Diego, and Los Angeles, Calif., and Portland, Oregon) are on the West Coast. In addition to this published list, there are also sites of certain military installations, and atomic energy installations, which are considered critical areas.

NEW PRODUCTS, PROCESSES & SERVICES...in the nuclear field...

FROM THE MANUFACTURERS: New low cost film badge service is designed specifically for use when handling gamma radiation sources. The film badges are available in lots of 20, 50, 100 or 500, for use only when needed. The wearer's name, with date, is placed on each badge, as it is issued; each week the used badge, with an unused badge for control, is mailed to this supplier. After processing, results are reported to customer; these, and the subsequent filing procedures, are said to satisfy USAEC requirements.--Technical Operations, Inc., Arlington, Mass.

New cart unit, to overcome the difficulties of transporting bulky and heavy equipment for clinical radiation measurements. This unit, Model CA4, is designed to carry a shielded radiation detector, in addition to the necessary scaling instrument, rate meter, or recorder. (The cart is said to be rust, chip, and corrosion proof, and capable of being cleaned in case of contamination.) The unit's probe arm is flexible, and may be set in various positions. It extends to 44-inches, carries up to 23-lbs., and is counter poised so that the detector will remain in position during uptake studies. A clamp at the end of the arm holds a 3-inch diameter detector or a smaller detector or shield with a suitable adapter.....Fifteen naturally occurring amino acids have now been added to the list of radiocarbon compounds available from this producer. These compounds, said to be uniformly carbon-14 labeled, are recommended by the producer for the study of synthesis and destruction of individual amino acids. In addition, the producer points out, they can be employed in estimating the concentration of specific amino acids in protein hydrolysates, protein metabolism, and in process control in food and animal feed industry. Since the specific activities of these compounds is high, their presence, or presence in products arising from them, will be detectable in high dilution.--Nuclear Instrument & Chemical Corp., Chicago 10, Ill.

Miniature basic unit (Model SC-33), said to be fundamentally the same as the larger basic unit of scintillation counters, as manufactured by this company. This new counter, which is 2-inches in diameter, and 6½-inches in length, is light weight, for portable equipment. The smaller diameter offers greater ease and economy in providing lead shielding, plus a more convenient size for hand held probes. Other features are its threaded end for rapid attachment of accessories, and its construction of strong, lightweight aluminum alloy, which is black anodized to provide a resistant finish. The phosphors, with maximum diameter 1½-inches, are used in conjunction with an RCA 6199 phototube.--Nuclear Research & Development, Inc., St. Louis 14, Mo.

Now available from stock is this producer's "Superscaler", a counting instrument for Geiger, proportional, or scintillation pulses, featuring both preset count and preset time operation. Its provision for plug-in units converts the scaler into a variety of specialized instruments. Each plug-in unit is mounted on a miniature chassis which can be plugged directly into the front panel of the scaler. Now available are a pulse amplifier, a ratemeter, a discriminator, and a blank chassis which make it possible for users of the scaler to construct their own special circuits to precede or follow the scaler.--Tracerlab, Inc., Boston 10, Mass.

NOTES: Needles which can deposit radioactive phosphorous in malignant tissue, and then dissolve in body fluids, have been developed at the U. S. Naval Hospital, St. Albans, N.Y., the recent convention of the American Chemical Society in Chicago was told by Cmdr. H. C. Dudley, Navy biochemist. The needles permit radiation effects at any desired location with a minimum of damage to adjacent tissues, and may be used under conditions where other forms of radiation therapy are not feasible, Cmdr. Dudley declared. The findings are the result of experiments on laboratory animals, and have not yet been used on humans, he emphasized. The needles are prepared by melting a mixture of germanium dioxide and titanium phosphate at high temperature. The germanium compound is said to be non-toxic, to be relatively unaffected by radioactivity, and to be slowly dissolved and eliminated by the body. The titanium phosphate can be prepared from radioactive phosphorous. Threads can be drawn from the molten mixture, and solidified into glass-like needles, less than 0.04-inches in diameter, he explained. The chief problems connected with the clinical use of radioactive phosphorous has been the tendency of the phosphorous compounds themselves to dissolve in the body or work their way into the blood stream, where they cause serious difficulties by destroying tissues, Cmdr. Dudley said.

RAW MATERIALS...radioactive minerals for nuclear work...

UNITED STATES: Utah- To diversify its interests, New Park Mining Co. has gone into uranium operations, W. H. H. Cranmer, president has now stated. First such activity was the acquisition by New Park & Oil, Inc. (a co-venture, also headed by Cranmer) of some 6,400 acres of oil leases between LaSal and Monticello, and 16 uranium claims near Grandview Point. The holdings were obtained largely from the Mid-West Uranium Co. of Denver.....Mining operations in Monument Valley, San Juan county, Utah, of Climax Uranium Co., have been closed down. Now, Climax has shifted these crews to its expanding operations in the Lukachukai mountains of northeastern Arizona.....Additional lands, in Grand County, Utah, have now been withdrawn from the public domain for utilization in the USAEC's uranium program to keep uranium production on the Colorado Plateau at the maximum.

CANADA: Uranium discoveries have now been made by Plum Uranium & Metal Mining, Ltd., some 50-miles east of the original Peach discovery in the Blind River area, in Baldwin Twp. Plum's discoveries here have lead to staking by others which has already spread into Porter, Hyman, and Nairn Twps., with some 550 claims recorded in this section. It is understood that Norando Mines has also staked a large block of adjoining ground. Sampling of the Plum discovery has so far been limited to confirming that the radioactivity is due to uranium; identity of the minerals has not yet been established.....Exploration at Beaver Lodge Uranium Mines, which ties onto the southeast corner of Nesbitt LaBines ABC holdings, has shown some favorable zones, one assaying 0.05% uranium oxide in a section of 19.5-feet, and another 0.11% uranium oxide for a 5-foot section.

NEW BOOKS & OTHER PUBLICATIONS...in the nuclear energy field...

Uranium Prospecting by Geobotanical Techniques. Methods of uranium prospecting based on observations that certain plants exhibit typical reactions to specific minerals. Geological Survey circular No. 264.--Chief of Publications, Geological Survey., Wash. 25, D. C. (n/c)

Legislation Concerning Long Term Utility Contracts; Hearings. Electric utility suppliers to the USAEC; legislation to protect such investments. 79 pages. Available from--Joint Congressional Committee on Atomic Energy, Wash. 25, D. C.

Behavior of Institutional Incinerators When Used to Burn Radioactive Wastes. Final project report for work done from Aug., 1950, to Nov., 1952. Document NYO-4517, available from--New York Office, USAEC, Columbus Ave., New York, N. Y.

Coloration of Optical Glasses by X-and Gamma Radiation. Work done at British Atomic Energy Research Establishment, Harwell. 19 pages. Available from--British Information Services, Rockefeller Plaza, New York 20, N.Y. (75¢)

Cathode Ray Tube Counter. Work done (under Air Force contract) at Williams College to investigate possibilities of cathode ray tube counter. Available from--Library of Congress, Publication Board Project, Wash. 25, D. C. (Microfilm: $1.75; Photostat: $2.50)

NUCLEAR RESEARCH PROJECTS...progress reports...

An agreement which opens the way for the immediate operation of the first university-owned nuclear reactor in the United States has now been signed by North Carolina State College, Raleigh (University of North Carolina), and the U.S. Atomic Energy Commission. Under the contract, the USAEC loans the college enough fissionable uranium-235 to fuel the college's research reactor, recently constructed in a new building on the campus. The reactor assembly is now complete, and most of the pre-operational testing also has been completed. Loading of the fuel, and initial operation of the reactor, will begin as soon as the fissionable material is received from the USAEC. The reactor was designed and built completely with University funds available to the college, and consequently is owned by the institution. One of its major purposes will be to supply reactor experience to undergraduate and graduate students in nuclear engineering, a new curriculum initiated by the College in 1950.

ATOMIC PATENT DIGEST...latest U. S. grants...

Radiation indicator. Apparatus for detecing the energy spectrum of beta radiation in terms of amount of beta radiation in each of several predetermined energy incremental intervals. Comprises (in part) a casing having beta-radiation-impermeable walls except for a beta-radiation-permeable wall portion, several electrically conductive partitions within this casing each directly electrically connected to the conductive walls of this casing to form separate chambers arranged parallel to the beta-permeable wall portion, whereby beta radiation passing through the permeable wall portion may also pass through certain of these partitions in dependence upon the energy level of the entering radiation. U. S. Pat. No. 2,649,554 issued Aug. 18th, 1953, to Nicholas Anton, Brooklyn, N. Y.

Scintillation counter and composite phosphor therefor. In a scintillation counter comprising a light-tight housing permeable to gamma and X-ray radiation, the improvement which comprises (in part) a phosphor member disposed in the housing comprising a main body of at least one crystal of an organic polycyclic phosphor producing light when excited by gamma and X-ray radiation and an inorganic phosphor with same characteristics. U. S. Pat. No. 2,650,309 issued Aug. 25th, 1953; assigned to Westinghouse Electric Corp., West Pittsburgh, Pa. (Inventors: Edward L. Webb, and Roy C. Fox.)

Electrolytic unit for manufacture of fluorine. Comprises (in part) a box shaped cathode for containing the electrolyte, a carbon anode dipping into the electrolyte contained in the cathode, a skirt located between the anode and the cathode, this skirt having an upper closed portion which provides a gas tight closure for the space surrounding and immediately above the upper part of the anode, and with an open ended bottom dipping into the electrolyte to separate the fluorine liberated at the anode from the hydrogen liberated at the cathode; and associated mechanical appurtenances. U. S. Pat. No. 2,651,613 issued Sept. 8th, 1953; assigned to United States of America (USAEC). (Inventors: Robert D. Fowler and William B. Burford III.)

Mass spectrometer beam regulator. An ion beam regulator comprising (in part) a radio frequency oscillator, a modulator having input terminals adapted for connection to the ion collector of a mass spectrometer and responsive to the ion current thereto, this modulator being connected to the radio frequency oscillator for modulating the radio frequency output voltage thereof, and associated circuitry. U. S. Pat. No. 2,651,723 issued Sept. 8th, 1953; assigned to United States of America (USAEC).

Ionization chamber circuit. Radiation measuring apparatus comprising (in part) input and output pentode vacuum tubes, a direct current meter in series with the plate load resistor of the output tube, an ionization chamber connected between the suppressor grid of the input tube, and the positive terminal of the voltage supply, and means for applying operating potentials to the screen grids of these tubes from the voltage supply. U. S. Pat. No. 2,651,726 issued Sept. 8th, 1953; assigned to United States of America (USAEC). (Inventors: Darol K. Froman, William H. Hinch, and Richard J. Watts.)

Apparatus for utilizing radioactive materials for generating electrical energy. Comprises (in part) an evacuated envelope including a metal portion and an insulation portion, a radioactive material located adjacent the metal portion and providing a source of charged particle emission, means which are semi-transparent to this emission located at varying distances from the source for collecting these emitted particles to establish a plurality of potentials with respect to the source and to ground, and means for utilizing these potentials. U. S. Pat. No. 2,651,740 issues Sept. 8th, 1953; assigned to Radio Corp. of America. (Inventor: Ernest G. Linder.)

Sincerely,

The Staff,
ATOMIC ENERGY NEWSLETTER

September 22nd, 1953.